



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,047	07/24/2003	Yoshikazu Kato	112857-412	4039
29175 7590 01/02/2008 BELL, BOYD & LLOYD, LLP P. O. BOX 1135 CHICAGO, IL 60690			EXAMINER DOVE, TRACY MAE	
			ART UNIT 1795	PAPER NUMBER
			MAIL DATE 01/02/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/628,047

**Applicant(s)**

KATO ET AL.

**Examiner**

Tracy Dove

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-9 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) 4-8 and 12-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,9 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This Office Action is in response to the communication filed on 11/19/07. Applicant's arguments have been considered, but are not persuasive. Claims 1, 3-9 and 11-16 are pending. Claims 4-8 and 12-16 are withdrawn. This Action is made FINAL.

#### *Election/Restrictions*

Claims 4-8 and 12-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention. Election was made **without** traverse in the reply filed on 5/12/06.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al., US 6,632,566 in view of Yoshino et al., US 5,631,100.

Yamada teaches a nonaqueous electrolyte secondary battery comprising a positive electrode containing a  $\text{Li}_x\text{M}_y\text{PO}_4$  compound (abstract). The  $\text{Li}_x\text{M}_y\text{PO}_4$  compound has an olivine structure and M is at least one of 3d transition metals (5:14-20). Yamada teaches a specific example wherein M is Fe (iron) at column 6, lines 5-38. The battery further comprises a negative electrode and electrolyte (4:46-55). As a binder contained in the positive electrode active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45).

Yamada does not explicitly teach a binder comprising a styrene butadiene latex adhesive and a polyacrylic acid thickener.

However, Yoshino teaches a secondary battery comprising a lithium-containing composite metal oxide cathode active material, a negative electrode and an electrolyte (abstract). The cathode active mixture contains 0.1-20 pbw, preferably 0.5-10 pbw of a binder material based on 100 pbw of the electrode active material. The binder preferably comprises a styrene-butadiene latex (7:6-14). When a water-soluble polymer, such as styrene-butadiene latex is used as a binder, a water-soluble thickener may be added as an additive thereto in an amount of 2-60 pbw per 100 pbw of the solid value of the styrene-butadiene latex. Examples of water-soluble thickeners are polyacrylic acid, carboxymethylcellulose and methyl cellulose (8:8-17). The cathode may contain 5 pbw of carbon material (graphite + acetylene black) to 100 pbw of positive active material (Examples). The battery exhibits a high voltage operative at a voltage of from 2.6 to 3.5 V (12:10-40).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use the known binder of Yoshino for the positive electrode binder of Yamada. Yamada teaches as a binder contained in the positive electrode active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45). Yoshino is directed toward nonaqueous batteries with positive electrode binders containing a styrene butadiene latex adhesive and a thickener such as polyacrylic acid.

***Response to Arguments***

Applicant's arguments filed 11/19/07 have been fully considered but they are not persuasive.

Regarding Yoshino, Applicant argues while the reference "broadly describes the use of binders on either electrode", "nowhere in the specification does the reference teach using SBR latex on the cathode". This argument is contradictory. If the reference broadly describes the use of binders on either electrode, the reference clearly teaches using such binders on the cathode. At least claims 1 and 3 of Yoshino teach the binder may be used for the anode or the cathode. Yoshino is not limited to any particular preferred embodiment.

Applicant asserts unexpected results have been demonstrated. However, no evidence of unexpected results has been provided. Unexpected results must distinguish the claimed invention over the *prior art of record*. Yoshino teaches the cathode active mixture contains 0.1-20 pbw, preferably 0.5-10 pbw of a binder material based on 100 pbw of the electrode active material. The binder preferably comprises a styrene-butadiene latex (7:6-14). When a water-soluble polymer, such as styrene-butadiene latex is used as a binder, a water-soluble thickener may be added as an additive thereto in an amount of 2-60 pbw per 100 pbw of the solid value of the styrene-butadiene latex. Examples of water-soluble thickeners are polyacrylic acid, carboxymethylcellulose and methyl cellulose (8:8-17).

Applicant asserts even if Yoshino's thickener range encompasses the claimed range, Yoshino still teaches away from the claimed invention. It is unclear how Applicant concludes a prior art reference teaches away from a claimed range when the claimed range is encompassed by the prior art.

Applicant argues Yoshino does not disclose a lithium iron phosphorous oxide cathode active material having an olivine structure. Applicant further argues Yamada fails to provide a binder that includes a rubber latex adhesive and a thickener. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant has not addressed the Examiner's motivation for combining the references. One of skill would have been motivated to use the known binder of Yoshino for the positive electrode binder of Yamada. Yamada teaches as a binder contained in the positive electrode active material, any suitable known resin material, routinely used as a binder for a layer of the positive electrode active material of this sort of nonaqueous battery, may be used (6:41-45). Yoshino is directed toward nonaqueous batteries with positive electrode binders containing styrene butadiene latex adhesive and a polyacrylic acid thickener.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Application/Control Number:  
10/628,047  
Art Unit: 1795

Page 6


however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 26, 2007

  
TRACY DOVE  
PRIMARY EXAMINER  
12/07